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Review Article

Health Management & Policy Section

An Evaluation on Medical Education, Research and Development of AYUSH Systems of Medicine through Five Year Plans of India

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ABSTRACT

Introduction: Indian system of medicine has its origin in India. The system is currently renamed as AYUSH, an acronym for Ayurveda, Yoga & Naturopathy, Unani, Sidha and Homeopathy. These are the six Indian systems of medicine prevalent and practiced in India and in few neighboring Asian countries.

Objective: The primary objective of this review was to gain insight in to the prior and existing initiatives which would enable reflection and assist in the identification of future change.

Materials and Methods: A review was carried out based on the five year plan documents, obtained from the planning commission web portal of Govt. of India, on medical education, research and development of AYUSH systems of medicine.

Results: Post independence, the process of five year planning took its birth with the initiation of long term planning in India. The planning process embraced all the social and technology sectors in it. Since the beginning of five year planning, health and family welfare planning became imperative as a social sector planning. Planning regarding Indian Systems of Medicine became a part of health and family welfare planning since then. During the entire planning process, a progressive path of development could be observed as per this evaluation. A relatively sluggish process of development was observed up to seventh plan however post eighth plan the growth took its pace. Eighth plan onwards several innovative development processes could be noticed. Despite the relative developments and growth of Indian systems of medicine these systems have to face lot of criticism and appraisal owing to their various characteristic features. In the beginning the system thrived with great degree of uncertainty, as described in 1st five year plan, however has progressed ahead with a vision to be a globally accepted system, as envisaged in 11th five year plan.

Conclusion: A very strong optimistic approach in spreading India's own medical heritage is the need of the hour. The efforts are neither completely insufficient nor sufficient enough; hence a continuous endeavor for the revival and dissemination of India's own medical inheritance for the welfare of the society at large is highly desirable.

Keywords: Accreditation of AYUSH institutions, Clinical training, ISM medical education, National level entrance examination

INTRODCUTION

Indian System of Medicine is the ethnic bequest deeply buried in the traditional believes of the people of India [1]. In fact India is the only country to legalize these traditional systems of medicine and accept them as the complete systems of medicine [2]. A special department called Department of Indian Systems of Medicine and Homoeopathy (ISM&H) was created in March, 1995 and re-named as Department of AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy) in November, 2003 with a view to provide increased attention to the development of education and research in AYUSH systems [2,3]. At present the AYUSH systems of medicine are a part of mainstream health care system under the scheme of Mainstreaming of AYUSH and Revitalization of local health tradition under the broader umbrella of National Rural Health Mission (NRHM). NRHM came in to play in 2005 but implemented at ground level in 2006 and introduced the concept of 'Mainstreaming of AYUSH and Revitalization of Local Health Traditions' to strengthen public health services [4-9]. As on 1st April 2014, there were 736538 AYUSH practitioners of which 399400, 1764, 47683, 8173 and 279518 practitioners represented Ayurveda, Yoga & Naturopathy, Unani, Sidha and Homoeopathic system of medicine respectively. Similarly 3615 AYUSH hospitals were distributed among 2838 Ayurveda, 7 Yoga, 35 Naturopathy, 257 Unani, 265 Sidha and 213 Homoeopathic hospitals by this time. There are total of 513 UG and 151 PG colleges of all these systems throughout the country. In all these statistics Ayurveda system outnumbered all other systems of AYUSH [2]. Given the context a review was carried out based on the five year plan documents, obtained from the planning commission web portal of Govt. of India, on medical education, research and development of India systems of medicine. In this review the acronyms ISM&H and AYUSH have been used interchangeably owing to their reference during different five year plans.

OBJECTIVE

The primary objective of this evaluation was to gain insight in to the prior and existing initiatives in the realm of medical education, research and development in AYUSH systems of medicine which would enable reflection and assist in the identification of future change.

MATERIALS AND METHODS

A systematic and extensive evaluation of documents of five year plan from 1st to 11th was the main mode of study. In this study an effort was made to combine both the formative and summative policy evaluation processes for the purpose of evaluating ISM policies. The 12th five year plan was deliberately dropped for complete evaluation as the same is currently in operation and conclusions could not be arrived before its completion but the same was cited at places as per its relevance and importance.

RESULTS

A relatively sluggish process of development was observed up to seventh plan however post eighth plan the growth took its pace.

Eighth plan onwards several innovative development processes could be noticed. At the very outset of planning process the future of these systems of medicine were never envisaged in their own area of utility only rather systematic approach was envisioned to bring them in to mainstream medical system based on proper and rigorous research and investigation. It was also envisaged that the research in all aspects of indigenous system of medicine should be fostered not only in their respective institutions but also in the modern counterparts [10].

First Five Year Plan (1951–1956) [10]

- Professional training and practice of indigenous medicine was the major focus.
- Proposals for uniform education system were made throughout the country.
- Curriculum should be an amalgamation of modern science and indigenous doctrine based upon research and experience.
- Eligibility criteria should be a combination of basic science and requisite knowledge to acquire mastery in Ayurveda.
- Full time five year courses with an optional junior diploma course were proposed.
- Establishment of higher level institutions for higher education and research of high quality.
- Besides the state boards central councils were felt necessary.
- Rs 95.23 lacs and Rs 1.06 crores were sanctioned respectively for education and training and hospitals and dispensaries.
- The system of Yoga and Naturopathy was considered as a way of life rather than a system of treatment. Many of the basic principles of nature cure are found assimilated in physical medicine hence the possibility of its teaching as physical medicine was also explored in All India Institutes.
- The immediate action during this period was research and standardization of nature cure and dissemination of the evidence based on research.
- The strategies for homoeopathy was primarily focused on the formation of a central council, up-gradation and set up of new institutions, facilities for research, establishment of a central manufacturing and standardizing laboratory at Lucknow. Proposed course was a blending of both the modern and Homoeopathic medicine which should be imparted in first 2 years and next 3 years respectively.

Second Five Year Plan (1956–1961) [11]

- Proposals for development of research center and post graduate institute at Jamnagar and opening of five Ayurvedic colleges, and expansion of 13 existing colleges were made.
- The central council of Ayurvedic research was set up in 1959.
- Two advisory committees, one of Homoeopathy and one on Unani were also set up.
- The post graduate training center was set up in 1956 to conduct advanced and critical research in Ayurveda at the central institute of research in indigenous system of medicine at Jamnagar.

Third Five Year Plan (1961–1966) [12]

- A four year diploma course in Ayurveda with a curriculum comprising of the concurrent courses in Ayurveda and modern medicine was recommended.
- Provisions were made to establish Sathological laboratories so that modern scientific methods could be utilized for placing nature cure treatment on a sounder footing.
- Grants were released for upgrading, improving and setting up of Homoeopathic institutions.
- Advisory committee on Homoeopathy and Unani was constituted.

Fourth Five year plan (1969–1974) and Fifth Five Year Plan (1974–1979) [13,14]

- Central sponsorship was being provided for research, Education and establishment of pharmacies with 100% financial assistance.
- Coordinated efforts were started for research in communicable and non-communicable diseases.
- It was envisioned that traditional method could contribute in finding effective methods of contraception.

Sixth Five Year Plan (1980–1985) [15]

- Strategies were proposed focusing on prevention of growth of substandard teaching institutions.
- Financial support was made for improving quality of teaching and introduction of modern methods of clinical and pathological investigations with adequate knowledge on subjects of Anatomy and Physiology.
- Development of curative facilities through hospitals and dispensaries and involvement in public health activities was proposed.
- Coordination for purposive and fruitful research, standardization of pharmacopoeia and production of quality drugs.

Seventh Five Year Plan (1985–1990) [16]

- Councils formed at central level on respective systems of Indian Medicine should continue to guide the activities with regard to promotion of research, undergraduate and post graduate education and above all promotion of health care delivery system.
- Proposals were made for setting up of standards for UG and PG education, development of postgraduate education, standardization of drugs, and availability of raw materials for the production of drugs.
- For the state schemes it was related to UG education, delivery of health care and production of drugs.

Eighth Five Year Plan (1992–1997) [17]

- Reiteration of earlier schemes

Ninth Five Year Plan (1997–2002) [18]

- Efforts were made in the direction of improving human resource development through: creation of an appropriate mechanism for quality assurance in educational process in AYUSH institutions; Strengthening the infrastructure in ISM&H colleges and National institutes to ensure uniformity in standards of teaching in all systems of ISM&H; Creation of appropriate mechanism for funding the Govt. educational institutions so as to ensure quality and relevance of training in ISM&H colleges; Promoting CME for all ISM& H practitioners.
- Forty institutions were identified for organizing reorientation training for teachers and physicians of ISM&H.
- Statutory bodies in respective systems were established such as CCIM (Central Council of Indian Medicine) in 1970 and CCH (Central Council of Homoeopathy) in 1973.
- National institutes under the department were developed as centers of excellences; these include National Institute of Ayurveda, Jaipur; National Institute of Homoeopathy, Kolkata; Institute of post graduate teaching and research, Gujarat Ayurveda University, Gujarat.
- An important initiative was taken up during the ninth five year plan for the development ISM&H paramedics.

- CME on various national health programs was proposed in different areas such as: (1) Health Education; (2) Drug distribution for national health programs; (3) Motivation for family welfare; (4) Motivation for Immunization; and (5) Improvement in environmental sanitation.
- Four research councils were developed in the field of ISM&H and are fully supported and funded by central government which include Central council for research in Ayurveda and Sidha (CCRAS), Central council for research in Unani Medicine (CCRUM), Central council for research in Homoeopathy (CCRH), Central council for research in Yoga and Naturopathy (CCRYN) for managing research and development activities and maintaining standards of education throughout the country by the end of ninth plan.
- Formulations traditionally used in ISM&H for the treatment of illnesses for which there is no effective treatment in Allopath was also proposed to be tested for efficacy in addition to clinical trials on formulations traditionally used in tribal societies and reported as being effective.

Tenth Five Year Plan (2002–2007) [19]

- The plan proposed to conduct entrance examination for enrolling students in to UG programmes with appropriate eligibility criteria in each state, ensure uniformity in admission process for both UG and PG courses, reorient the syllabus to suite the current need and enhance employability, strengthen the existing national centers of excellence in collaboration with the department of ISM&H, develop one model UG/PG college in each state and operationalise an appropriate and transparent accreditation system for educational institutes through councils of ISM&H.
- Quality assurance of ISM&H medical education was a topic of discussion in tenth five year plan.
- It was recommended that suitable amendments be made to the Indian Medicine Council Act 1970 and Homoeopathy Central Council Act 1973 to ensure that new colleges comply with the prescribed guidelines.
- Efforts were made to reduce the proliferation of substandard medical colleges and check the deterioration in standards of teaching.
- Continuing medical education were planned which includes one month refresher course for teachers and physicians and two months courses for ISM&H practitioners in specialized fields like *Ksharasutra*, *Pancakarma* therapy, dental practices and Yoga.
- The plan emphasized on biomedical research pertaining to drug development in specific areas where strength of ISM has already been established, research on the fundamental principles of ISM&H, research in the preventive and promotive aspects of ISM especially life style related disorders, continuation of medico-historical investigations and evaluation of promising and widely accepted practices and skills of traditional healers in rural and tribal areas.

Eleventh Five Year Plan (2007–2012) [20]

- Several innovative initiatives have been proposed in eleventh plan such as National Education Testing type of testing for AYUSH teachers and NAAC type of assessment and accreditation for AYUSH colleges
- Continuing Medical Education/Reorientation and Training Program were initiated with two sub-components: (i) reorientation program for AYUSH personnel; and (ii) short-term CME program for AYUSH physicians/practitioners. Government/ Private/NGO institutions of AYUSH are eligible to take up this training program.
- The program has been restructured for Eleventh Five Year Plan with more components including use of IT tools to modernize CME.
- Department of AYUSH in collaboration with Central Council of Research in Ayurveda and Siddha (CCRAS), Indian Council of Medical Research (IMR) and Council for Scientific and Industrial Research (CSIR) initiated the Golden Triangle Research partnership aimed at scientific validation and development of Research & Development based drugs as well as development of herbal drugs based on traditional medicinal knowledge for prioritized disease conditions. AYUSH drug industry is being associated with this initiative.

In this review the initiatives in the 12th plan (2012-2017) were precluded deliberately as the plan is currently in operation.

DISCUSSION

India has already passed 67 years of independence and more than 65 years in five year planning process. After independence, with the initiation of long term planning, five year plan took its birth and in that all social and technology sector planning started appearing. Since the beginning of five year planning health and family welfare planning became imperative as a social sector planning. Planning regarding Indian Systems of Medicine became a part of health and family welfare planning since then. During the entire planning process a progressive path of development could be noticed. A relatively sluggish process of development was observed up to seventh plan however post eighth plan the growth took its pace. Eighth plan onwards several innovative development processes could be observed. Despite the relative developments and growth of Indian systems of medicine the systems have to face lot of criticism and appraisal owing to their various characteristic features. At the beginning the system thrived with great degree of uncertainty, as described in 1st five year plan, however progressed ahead with a vision to be a globally accepted system, as envisaged in 11th five year plan.

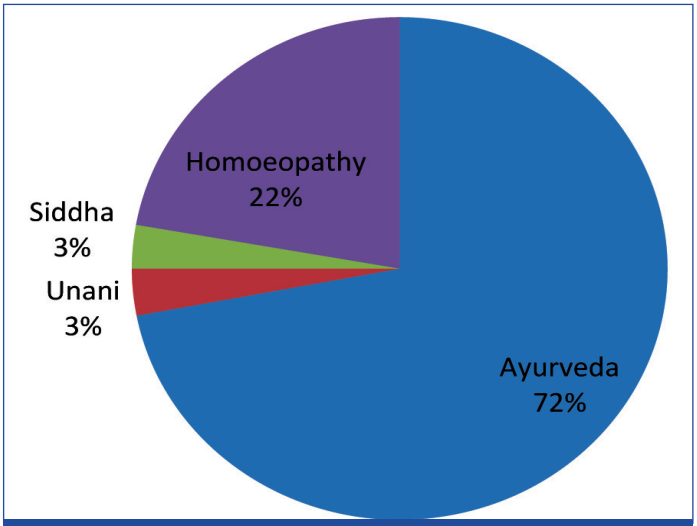
AYUSH education system is improving day by day but is not up to the mark and requires stringent guidelines and continuous monitoring for quality checks. A national level entrance examination is the need of the hour for the entry to graduate level education in AYUSH colleges across the entire nation. This has been made mandatory in mainstream medical education and is successfully run in the country. Pursuant to the notification published in the Gazette of India extraordinary dated 21st December, 2010, the Medical Council of India with the approval of the Central Government amended the regulations on Graduate Medical Education 1997 and made provision for a Single Eligibility cum Entrance Examination, namely National Eligibility cum Entrance Test (NEET) for admission to MBBS Course in each academic year. The Dental Council of India also amended the BDS course Regulations 2007 and notified in the Gazette of India Extraordinary dated 31st May, 2012 that admission to BDS course in each academic year shall be through National Eligibility Cum Entrance Test (NEET) [21]. However this kind of an entrance examination is not available in ISM&H sector. ISM&H colleges in different states are dependent upon their respective state level entrance examinations such as CET in Maharashtra and JEE in Odisha etc.

More emphasis should be laid on clinical exposure in terms of bedside education, clinical examination of patients with right kind of diagnostic approaches; pathological and radiological techniques. There should be a greater focus on clinical training in Ayurveda. Making distinction between clinical and nonclinical subjects of Ayurveda hardly makes any sense as the approach is clinical from the beginning of the studies itself. During the ancient times the disciples of Ayurveda, under *guru-sishya* (mentor-disciple) tradition, used to get exposure to the clinical activities right from their entry in to the field of Ayurveda. The sections of

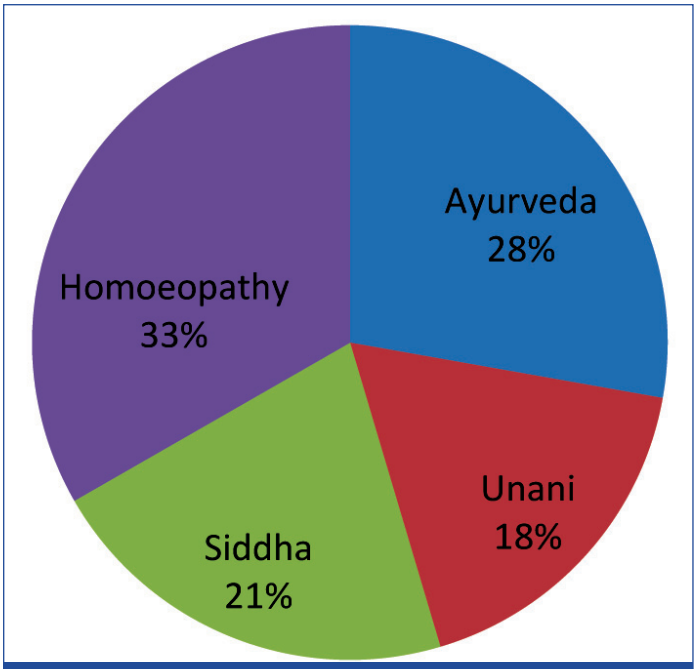
Sutrasthana, as delineated in the classical treatises of Ayurveda, which primarily deal with the fundamentals, also deal with the clinical topics. Extension of clinical training needs to be protracted even after the completion of the course by designing effective residentship programmes for the young Ayurveda graduates [22]. Furthermore studies also revealed that the Undergraduate level clinical exposure to students is not satisfactory. This is reflected in certain clinical areas; such as *Panchakarma* (five basic purification therapies), *Kshara Sutra* (medicated thread used in the treatment of anal fistula and hemorrhoids), and *Jalaukavacharana* (leech therapy). Besides these specialized areas students at UG level are not equipped with basic skills to handle emergencies required at primary health care settings through Ayurveda [23]. Hence it is highly recommended that the institutes should create ample scope for clinical exposure for the graduate students in Ayurveda. This is equally important in other systems of Indian medicine such as; Homoeopathy, Sidha, Unani, Yoga and Naturopathy and clinical exposure to the students should be emphasized which is grossly deficient in the education system of these systems of medicine.

Inclusion of academic research findings in to the curricula is of paramount importance especially in the field of Ayurveda may be other disciplines too. Every year a noticeable number of MD and PhD student pass out from various Ayurveda colleges across the country. [Table/Fig-1,2] shows the percentage of admission capacity of various PG institutions and exclusive PG institutions of AYUSH system respectively. It is very clear that each of these MD and PhD students do submit a research thesis as a part of the fulfillment of respective degrees. As on 01/04/2014 there were 98 post graduates Ayurveda colleges in India with an admission capacity of 2441 seats each year [24]. Similarly many of the post graduate institutes also provide doctoral level (PhD) education involving hardcore research. Such meticulous research carried out under the supervision of an academic expert should not go in vein and hence the results need to be incorporated in to the respective areas and disciplines of Ayurveda syllabus. This will help in introducing the latest scientific developments of Ayurveda to graduate students. This principle is not exclusion to other systems of ISM&H.

Credit point system needs to be introduced for the career promotion of clinicians and academicians in ISM&H fraternity. This would be similar to that of MCI pattern of credit system. The medical council of India has recently introduced this concept for continued medical education (CME). A minimum of 150 credit hours is needed to renew medical registration. This has led to most state



[Table/Fig-1]: System-wise percentage of admission capacity of various PG AYUSH institutions as on 1st April 2014*.
#Source-Ministry of AYUSH, Govt. of India, UG-Under Graduate, AYUSH-Ayurveda, Yoga &Naturopathy, Unani, Siddha and Homoeopathy
*Ministry data do not show any PG institution in the discipline of Yoga and Naturopathy as on 1st April, 2014.



[Table/Fig-2]: System-wise percentage of admission capacity of exclusive PG AYUSH institutions as on 1st April 2014*.
#Source-Ministry of AYUSH, Govt. of India, UG-Under Graduate, AYUSH-Ayurveda, Yoga &Naturopathy, Unani, Siddha and Homoeopathy
*Ministry data do not show any exclusive PG institution in the discipline of Yoga and Naturopathy as on 1st April, 2014.

medical councils coming up with their guidelines for credit hours [25]. There are many objections from medical fraternity for such a system as many other parallel technical professionals do not have to face such credit system such as lawyers and engineers etc [26]. However this will invariably help in creating a competitive attitude among practitioners and academicians in the realm of ISM&H [27].

Furthermore, relatively dismal picture is being noticed in the realm of research publications in AYUSH systems of medicine. Albeit mushrooming of scientific journals are found during these days but very few meet the required scientific rigor. At the present time a list of 3 PUBMED (US National Library of Medicine, USA) indexed journals, 38 non PUBMED indexed journals, 26 Journals of Complementary and Alternative Medicine (CAM), 4 Hindi Ayurveda Journals and 11 magazines of Ayurveda have been documented [28]. Compared to Ayurveda scientific publications in other systems of India medicine is negligible. Dedicated journals pertinent to specific systems of Indian medicine are relatively few. Homoeopathy has one dedicated journal, Indian Journal of Research in Homoeopathy, published as an official publication of Central Council of Research in Homoeopathy (CCRH), Govt. of India [29]. Scholars of other Indian systems of medicine depend upon pertinent journals for publication of their scientific work. The total number of scientific publications till date is 21076 which include 14664, 1396, 2104, 640 and 2272 publications of Ayurveda, Yoga and Naturopathy, Sidha and Homoeopathy system of medicine respectively [30]. The quality and standard of most of these journals is a matter of great concern. Many of the journals of Indian systems of medicine are identified as predatory journals by Jeffrey Beall from the University of Colorado [31]. Given the situation there is an urgent need to create awareness among the scholars of Indian system of medicine about poor quality journals, training programs on research methodology, and scientific writing skills to the researchers of Indian medicine [32]. Uniform guidelines and strategies need to be brought in to the domain of research publication in Indian systems of medicine. Researcher should avoid submitting their work in predatory journals [33,34].

The systems have witnessed a gradual progress and many developments have happened be it in the field of education and training,

capacity building, research and development or medicinal flora or fauna. Recent developments include amendments in CCIM and CCH Act, Traditional Knowledge Digital Library, gene bank, mainstreaming of AYUSH and revitalization of local health traditions, medical tourism and drug development industry. However, this is not identically evident across the entire nation. This is mainly because health in India is a state matter.

CONCLUSION

Medical education, Research and Development in the realm of AYUSH have relatively been a weak concern compared to modern system of medicine in India. Two important factors are attributable to this; the inherent nature of these systems of medicine and lack of Governmental patronization as compared to modern medicine. But looking at the current scenario the systems really need a paradigm shift from their current form to a modern form to suite the need of the hour. A very strong optimistic approach in spreading India's own medical heritage is the need of the hour. The efforts are neither completely insufficient nor sufficient enough; hence a continuous endeavor for the revival and dissemination of India's own medical inheritance for the welfare of the society at large is highly desirable.

REFERENCES

[1] Samal J. Advancements in Indian System of Medicine (ISM) informatics: an overview. *Global J Res Med Plants & Indigen Med*. 2013;2(7):546–53.
[2] Department of AYUSH, Ministry of health and Family welfare, New Delhi, Govt. of India.
[3] National Health System Resource Center-National Rural Health Mission, Mainstreaming of AYUSH and revitalization of local health traditions under NRHM, An appraisal of the annual state program implementation plans 2007-2010 and mapping of technical assistance needs. Ministry of health and family welfare, New Delhi, Government of India.
[4] Govt. of India, 2005: National Rural Health Mission (2005-2012), Mission Document, Ministry of Health and Family Welfare, New Delhi.
[5] National Rural Health Mission, 2005: Framework of Implementation 2005-2012, Ministry of Health & Family Welfare, New Delhi, Government of India.
[6] Ministry of Health and Family Welfare, Mainstreaming of AYUSH under NRHM, Modified Operational Guidelines, (Updated on May 2011) Dept. of AYUSH, New Delhi, Government of India.
[7] Samal J. A Review on Mainstreaming of AYUSH and Revitalization of Local Health Traditions under NRHM. *J Res Educ Indian Med*. Online First: 30 Oct, 2015. doi:10.5455/JREIM.82-1362397123
[8] Samal J. Situational analysis and future directions of AYUSH: an assessment through five year plans of India. *J Intercult Ethnopharmacol*. 2015;4(4):348-54.
[9] Samal J. Role of AYUSH Doctors in Filling the Gap of Health Workforce Inequality in Rural India with Special Reference to National Rural Health Mission: A situational Analysis. *International Journal of Advanced Ayurveda, Yoga, Unani, Sidha and Homoeopathy*. 2013;2(1):83-89.
[10] Planning Commission Report on First five-year plan (1951-1956). New Delhi, Government of India.
[11] Planning Commission Report on Second five-year plan (1956-1961). New Delhi, Government of India.
[12] Planning Commission Report on Third five-year plan (1961-1966). New Delhi, Government of India.
[13] Planning Commission Report on Fourth five-year plan (1969-1974). New Delhi, Government of India.
[14] Planning Commission Report on Fifth five-year plan (1974-1979). New Delhi, Government of India.
[15] Planning Commission Report on Sixth five-year plan (1980-1985). New Delhi, Government of India.
[16] Planning Commission Report on Seventh five-year plan (1985-1990). New Delhi, Government of India.
[17] Planning Commission Report on Eighth five-year plan (1992-1997). New Delhi, Government of India.
[18] Planning Commission Report on Ninth five-year plan (1998-2002). New Delhi, Government of India.
[19] Planning Commission Report on Tenth five-year plan (2002-2007). New Delhi, Government of India.
[20] Planning Commission Report on Eleventh five-year plan (2007-2012). New Delhi, Government of India.
[21] National eligibility cum entrance test, Central board of secondary education, New Delhi. http://cbseneet.nic.in/cbseneet/welcome.aspx (Accessed on 10/08/2015).
[22] Manohar PR. Ayurvedic education: Where to go from here? *Ancient Sci Life*. 2014;33:143-45.
[23] Patwardhan K, Gehlot S, Singh G, Rathore HCS. The Ayurveda Education in India: How well are the graduates exposed to basic clinical skills? *Evid Based Complement Alternat Med*. 2011, doi:10.1093/ecam/nep113.
[24] Dept. of AYUSH, Ministry of Health and FW, Govt. of Indi, New Delhi.
[25] Center for CME accreditation, The Tamil Nadu Dr. MGR Medical University. 2010. Available from: http://web.tnmgrmu.ac.in/CME/accreditationcentre.pdf (Accessed on 09/08/2015)
[26] Sohoni C. Continuing medical education (CME): Why the fuss? *Indian J Radiol Imaging*. 2011;21:158–59.
[27] Samal J, Acharya RN, Puri S, Kumar S. Possible reformations in Ayurveda education system to suite the current need. *J Res Educ Indian Med*. Online First: 28 Oct, 2015. doi:10.5455/JREIM.82-1422866908
[28] Ayurbhisak, Ayurveda News Repository. http://ayurbhishak.wordpress.com/treatises/ (Accessed on 10/08/2015)
[29] Indian Journal of Research in Homoeopathy. http://www.ijrh.org/ (Accessed on 08/08/2015).
[30] Ministry of AYUSH, Government of India. AYUSH RESEARCH PORTAL. http://ayushportal.nic.in/default.aspx (Accessed on 12/08/2015).
[31] Scholarly Open Access: Critical analysis of scholarly open-access publishing. http://scholarlyoa.com/individual-journals/ (Accessed on 11/08/2015).
[32] Patwardhan K, Galib R, Thakur P, Kumar S. Peer reviewed journals of Ayurveda –An appraisal. *J Res Educ Indian Med*. 2014;20:141-52.
[33] Patwardhan B. Ethical and scientific aspects of research publications. *J Ayurveda Integr Med*. 2013;4:129 -31.
[34] Patwardhan B. Good publications need good research. *J Ayurveda Integr Med*. 2015;6:73-4.

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